TECHNICAL ASSISTANCE
SUCTION UNITS SERIES VORTECO

The documents of quality registration filled in our Factory at the moment of final checking and testing of the units are kept in the record office of the Company ALSA APPARECCHI MEDICALI S.R.L. and can be requested, if considered as necessary (specify the serial number of the unit).

REQUIRED INSTRUMENTS/EQUIPMENT AND REFERENCE RULES

1. Vacuum tester (tol. ± 5%) for depression from 0 to 250 mmHg (1 mmHg = 0.0013 atm or bar, 0.1333 kpa, 1.359 cmH_2O)
   The instrument can be even for a vacuum higher than 250 mmHg, but in this case it must be able to measure a low vacuum.
2. Free air flow tester (tol. ± 5%) for a free air flow from 1 to 10/15 l/min (or 600/1000 1/h).
3. Multimeter (tol. ± 1 %).
4. Tester for L.F. leakage currents measurements and protection hearth conducting resistance (the instruments must be able to make the measurements according to the International Safety Rules for L.F. leakage currents and protection hearth conducting).
5. There are a lot of Firms that manufacture this kind of items, for example BENDER, METRON, BIOTECH and so on.
6. The reference Rules are: IEC 601-1 (EN 60601-1) and ISO 10079-1.

GENERAL DESCRIPTION

A medical suction unit is an apparatus with 3 general sections:

a. Electrical vacuum pump (AS 130 is provided also with an electronic board which allows to fix the activation times “active times/passive times”)
b. Vacuum system (vacuum tubing, internal connections and vacuum controls)
c. Protection filters (when used), internal tubing and external tubing, including also connections/bottles/overflow devices. This system, so, must be airtight (any leakage prevent to reach the desired maximum vacuum/flow) and free from obstructions (an obstruction allows to the unit to reach the maximum vacuum, but it can decrease the aspiration flow).

ORDINARY MAINTENANCE

For each model the ordinary maintenance is detailed in the specific instructions to use the unit.

MAINTENANCE IN CASE OF MALFUNCTIONING

There are 3 possibilities:

1) The unit doesn't work because of a breakdown of the electric part.
2) The unit hasn’t the intended of the aspiration capacity (the vacuum data are those indicated in the instructions to use the units).
   According to the International Rules, a suction unit is with low vacuum/low flow when it reaches a vacuum of at least 60 kpa and a free air flow of at least 20 l/min measured to the joint of aspiration of the bottle.
3) The unit doesn’t work because suction group is partially obstructed or completely broken.

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1) Using the multimeter, check:
   - Supply and mains fuses (see the technical data on the label)
   - General switch and working switches (The correct working of the electronic board - only mod AS130)
   - Internal electric connections and suction group pump
2) Using the vacuum tester and/or the flow tester, check that the circuit has not any leak or obstruction (you have to check every single component if necessary excluding it from the circuit). A good method is to get through directly to the suction group to verify its suction capacity, and so, after having reconnected it to the circuit, make the same test on all the points of the circuit.
   Remember that with an obstruction (for example an obstructed bacterial filter) it seems the unit works regularly, but really it has a very low suction capacity (or even nothing).
3) If the problem is a presumed obstruction of the suction group, act in the following way:
   Unscrew the screws that block the suction part, disassembling all the internal parts, cleaning them and if necessary changing them. Reassembling the group, please note that the screws must be uniformly clasped.
4) If the suction group is completely broken, it must be disconnected from the suction circuit, disassembled, changed and reconnected to the suction circuit.
5) At the end of the technical intervention (connecting to the suction tubing first the vacuum tester, then the flow tester) check the normal working of the unit (intended vacuum and or flow) and so, in order to be sure that in disassembling and reassembling conditions of electrical risk haven’t been created, make a test on the L.F. leakage and of the protection hearth conducting using a specific tester (the procedures of execution of this test must be those specified in the relative International Safety Rules ISO 10079-1).

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SPARE PARTS / PARTI DI RICAMBIO
VACUTRON Series / Serie VACUTRON

- **GENERAL COMPONENTS / COMPONENTI GENERALI AS120 /AS130**

437029 - Power entry module with fuses-holder / Presa alimentazione con portafusibili
433026 - Mains fuses 500 mA (2pcs.) / Fusibili di rete 500 Ma (2pz.)
416090 - Mains switch (green) / Interruttore di rete (verde)
424017 - Vacuum-gauge(0-250 mmHg/1360 mm. H2O)/Vuotometro(0-250 mm Hg/1360 mmH2O)

- **ROTARY VACUUM CONTROL / REGOLATORE DI VUOTO (OLD SERIES)**

512737- Vacuum control - Part 1 / Regolatore di vuoto - Parte 1
497034- Vacuum control - Part 2 / Regolatore di vuoto - Parte 2
711472- Vacuum control - Part 3 / Regolatore di vuoto - Parte 3
705000- Vacuum control - Part 4 / Regolatore di vuoto - Parte 4
499056- Vacuum control - Part 5 / Regolatore di vuoto - Parte 5
710341- Vacuum control - Part 6 / Regolatore di vuoto - Parte 6
497010- Vacuum control - Part 7 / Regolatore di vuoto - Parte 7
711473- Vacuum control - Part 8 / Regolatore di vuoto - Parte 8
494086- V.C- part 9/ knob - part A)/ R.V - parte 9/ manopola - parte A)
494070- V.C - part 10/ knob - part B)/ R.V - parte 10/ manopola - parte B)
494071- V.C - part 11/ knob-part C)/ R.V-parte 11/ manopola - parte C)

- **ROTARY VACUUM CONTROL (present series 2010) / REGOLATORE DI VUOTO (2010)**

709443- Vacuum control - External body / Regolatore di vuoto - Corpo esterno
709445- Vacuum control - Rotatable pin / Regolatore di vuoto - Perno rotante
706370- Vacuum control - Spring / Regolatore di vuoto - Molla
496025- Vacuum control - Nut / Regolatore di vuoto - Dado
Aggiungere (vedi sopra) / Add (see above) = nr.1 496086, 494070, 494071

- **SUCTION PUMP (present series 2010) / GRUPPO ASPIRANTE (2010)**

415052- Suction pump / Gruppo aspirante

- **ELECTRONIC BOARD (ONLY FOR AS130) / SCHEDA ELETTRONICA (SOLO PER AS130)**

801362- Electronic board (timer) / Scheda elettronica (timer)

- **JARS/CAPS lt.1, 2 ,3**(umbreakable, autoclavable, plastic type) **/ VASI/TAPPI lt.1, 2, 3**(policarbonato infrangibile ed autoclavabile)

Check the jar before choosing the spare parts /Controllare il vaso prima di scegliere le parti di ricambio!!

- **VMLT2** Jar lt.2 - without cap / Vaso da 2 LT senza tappo
- **VMLT3** Jar lt.2 - without cap / Vaso da 3 LT senza tappo

TP/PG Complete cap for jar (with over-flow device and couplings) for VMLT2, VMLT3
Tappo completo per bott.(con dispositivo di troppo pieno e portagomma) per VMLT2, VMLT3

- **Over-flow device of TP/PG cap / Dispositivo di troppo pieno del tappo TP/PG**

TPG4 Coupling (screwed in the cap) / Portagomma (avvitato nel tappo)
TPG5 Gasket for**TPG4** / Guarnizione per **TPG4**
GL/TP Floating / Galleggiante
TPG6 Stem for floating **GL/TP** / Stelo per galleggiante **GL/TP**
TPG7 Support for stem **TPG6 /** Supporto per stelo **TPG6**
TPG8 Gasket for stem **TPG6** (inside **TPG4**) / Guarnizione per stelo **TPG6** (dentro **TPG4**)

- **Coupling for suction tubing (VMLT2, 3) / Portagomma per tubazione di aspirazione (VMLT2, 3)**

PT/7 Coupling for tubing **TS/7** with gasket /Ptg per tubazione TS/7con guarnizione
G/PT7 Gasket for coupling **PT/7 /** Guarnizione per portagomma **PT/7**.

- **VMLT1** Jar lt.1 - without cap

TP/B1 Complete cap for VMLT1 (with over-flow device and couplings)
Tappo completo per per VMLT1 (con dispositivo di troppo pieno e portagomma)

- **Over-flow device of TP/B1 cap / Dispositivo di troppo pieno del tappo TP/B1**

TPE4 Coupling (support of TPE7) / Portagomma (supporto di TPE7)
TPE8 Gasket for stem **TPE6** (Iinside TPE4) / Guarnizione per stelo **TPE6** (dentro TPE4)
GL/TP Floating / Galleggiante
TPE6 Stem for floating **GL/TP** / Stelo per galleggiante **GL/TP**

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TPE7 Support for stem **TPE6 /** Supporto per stelo **TPE6**

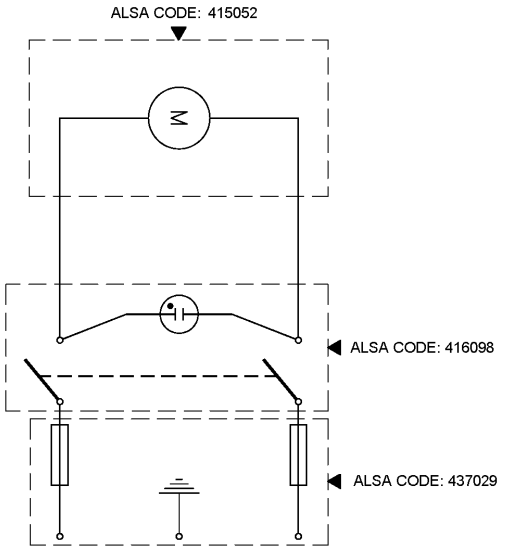
- **Silicone standard suction tubing / Tubazione standard di aspirazione in silicone**

  TS/7 Autoclavable tubing (mm.7x12)-p/mt/ Tubazione autoclavabile (mm.7x12) - al mt..

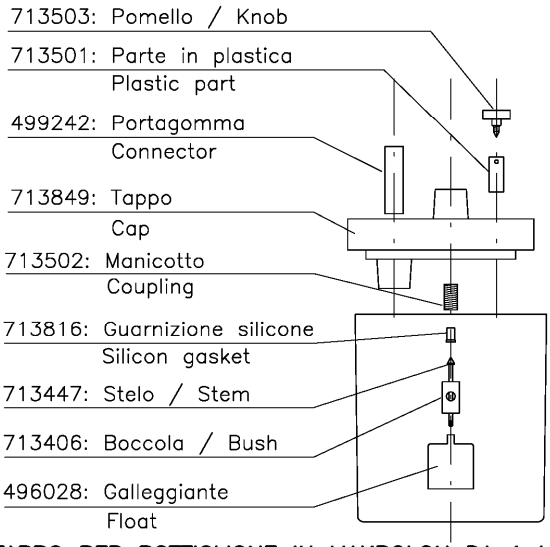
- **Silicone tubing (for connection unit/jars) /Tubazione in silicone (per collegamento apparecchio/bottiglioni)**

  TS/6 Autoclavable tubing (mm.6x11)-p/mt/ Tubazione autoclavabile (mm.6x11) - al mt..

SCHEMA ELETTRICO / ELECTRICAL DIAGRAM



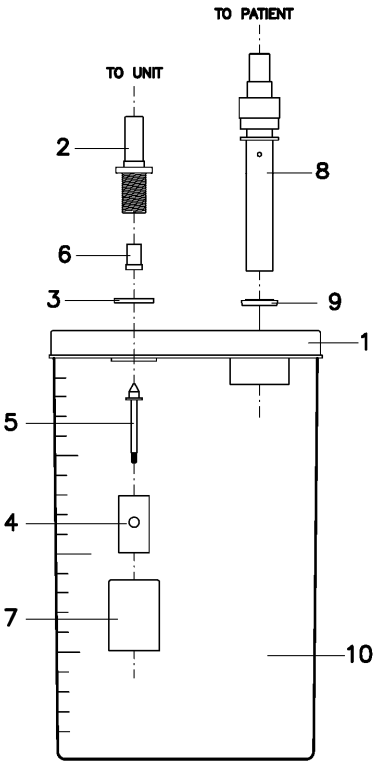
BOTTIGLIONE DA 1 LT (VMLT–1) CON TAPPO
1 LT JAR (VMLT–1) WITH CAP



TAPPO PER BOTTIGLIONE IN MAKROLON DA 1 LT
CAP FOR 1 LT MAKROLON JAR (ALSA CODE: 801300)

BOTTIGLIONE IN MAKROLON DA 1 LT (VMLT–1)
1 LT MAKROLON JAR (VMLT–1) (ALSA CODE: 713848)

VASO DI RACCOLTA DA 2 E 4 LITRI / 2 OR 4 LITRES COLLECTION JAR



ID	ALSA CODE	DESCRIZIONE / DESCRIPTION
	801290	TAPPO COMPLETO / COMPLETE CAP
1	713823	TAPPO / CAP
2	713408	PORTAGOMMA DIAM. 9 / HOSE CONNECTOR DIAM. 9mm
3	708200	GUARNIZIONE PER PORTAGOMMA / CONNECTOR GASKET
4	713407	BOCCOLA SOSTEGNO PER ASTA GALLEGGIANTE / SUPPORT BUSH FOR FLOATING ROD
5	713405	ASTA DEL GALLEGGIANTE / FLOATING ROD
6	713816	MANICOTTO SILICONE PER ASTA GALLEGGIANTE / SILICON GASKET FOR FLOATING ROD
7	496028	GALLEGGIANTE / FLOAT
8	711416	PORTAGOMMA ESTRAIBILE / EXTRACTABLE HOSE CONNECTOR
9	497042	GUARNIZIONE PER PORTAGOMMA / CONNECTOR GASKET
10	713846	BOTTIGLIONE MAKROLON 2 LITRI / 2 LT MAKROLON JAR (VMLT2)
10	713853	BOTTIGLIONE MAKROLON 4 LITRI / 4 LT MAKROLON JAR (VMLT4)